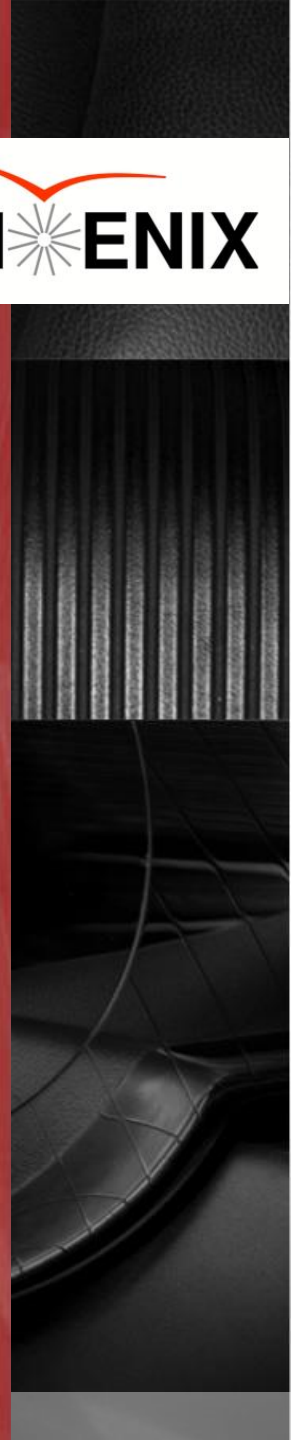
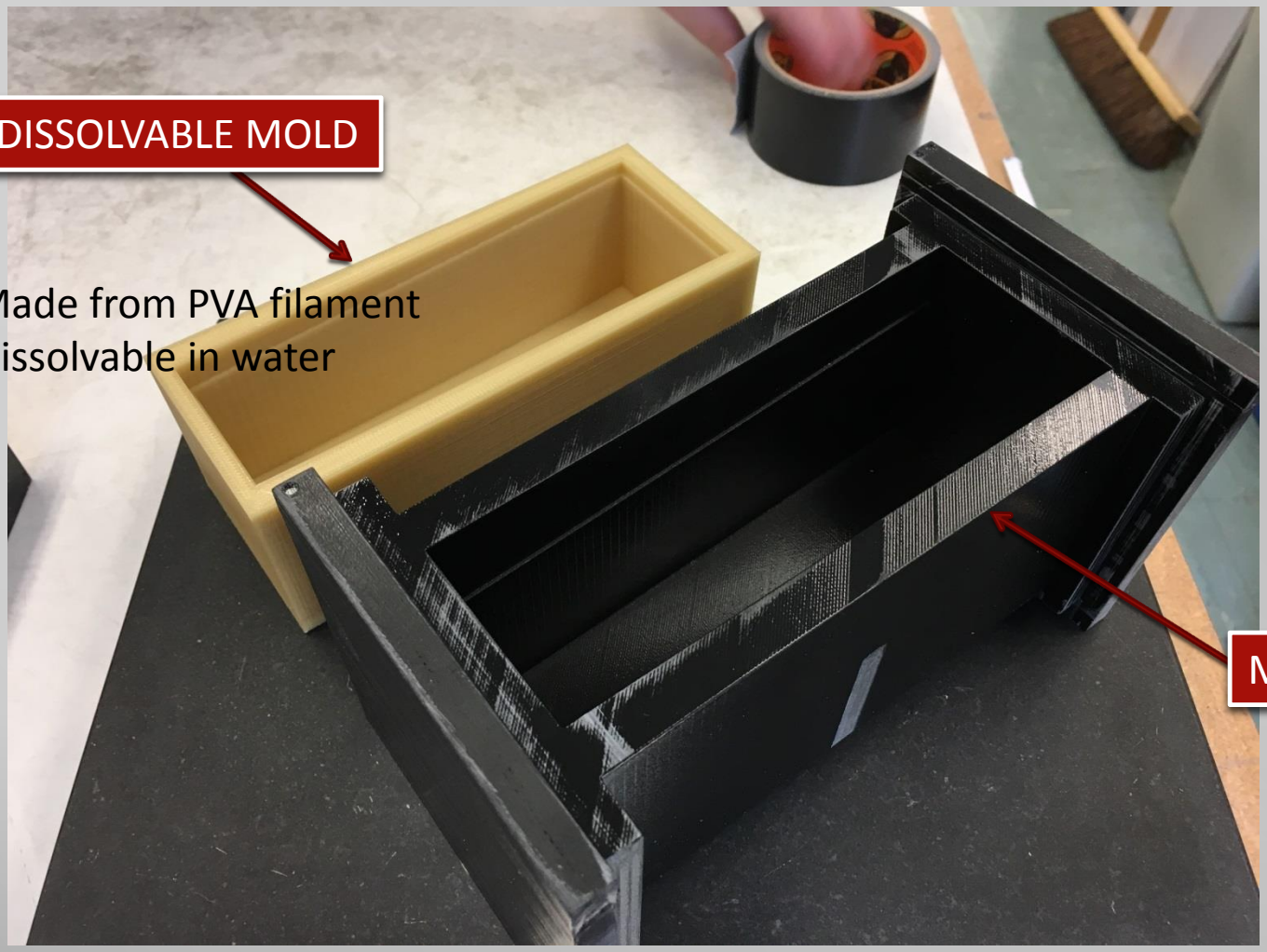
BNL EMCAL Mold Designs



2 DIFFERENT MOLD DESIGNS



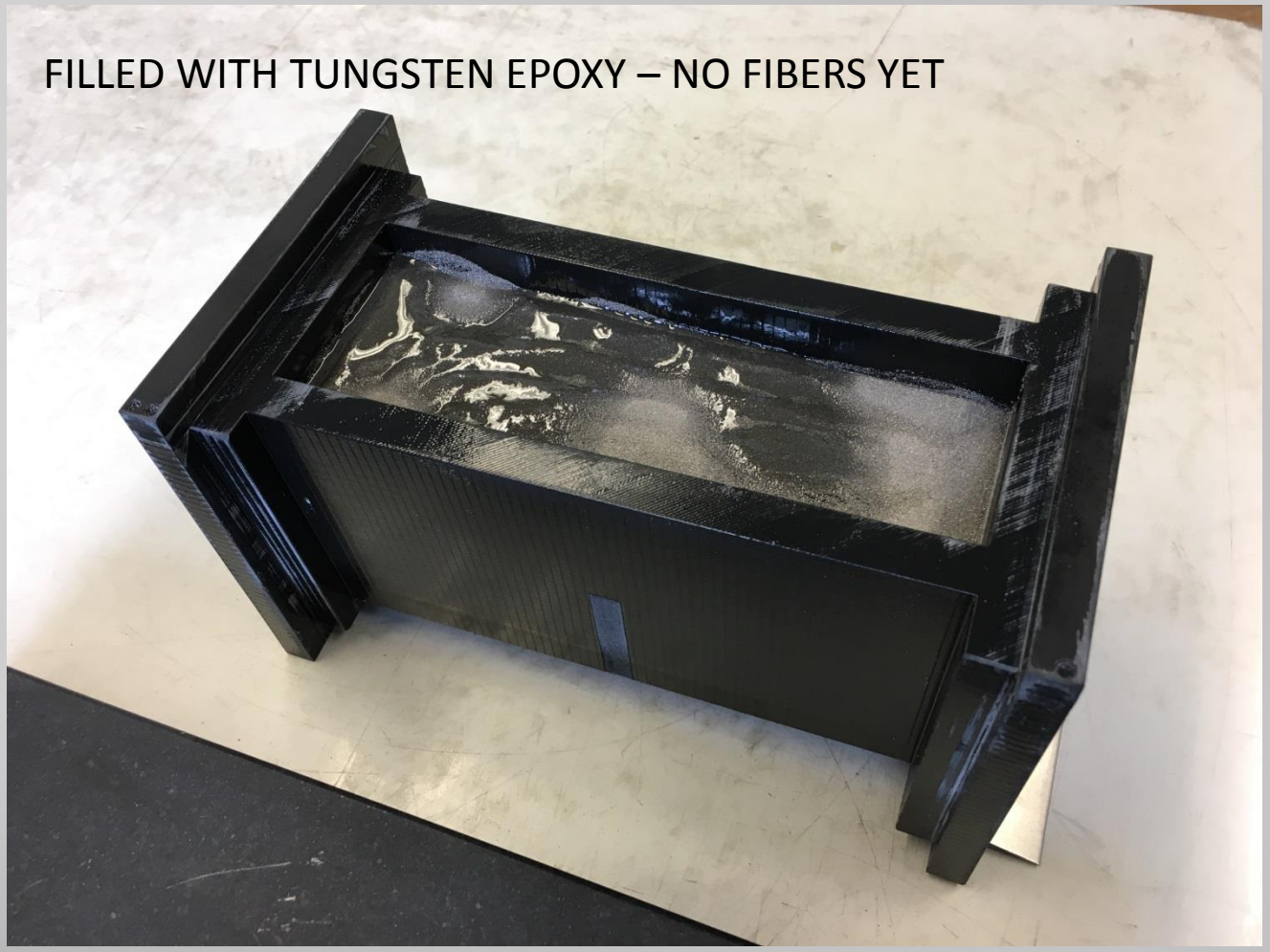
DISSOLVABLE MOLD

Made from PVA filament
Dissolvable in water

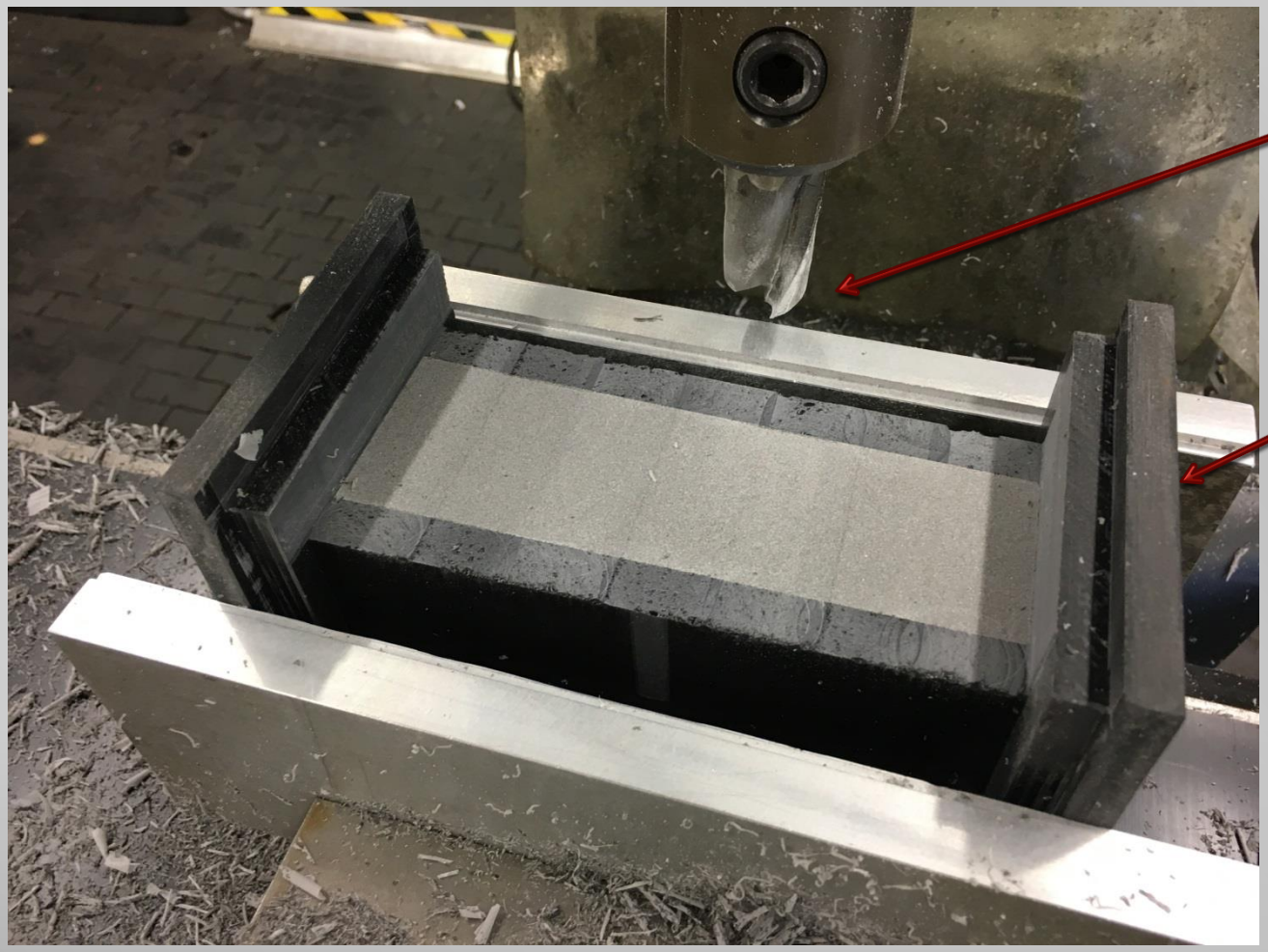
MACHINABLE MOLD

Easily machinable
“Digital ABS”

EMCAL Machinable Mold

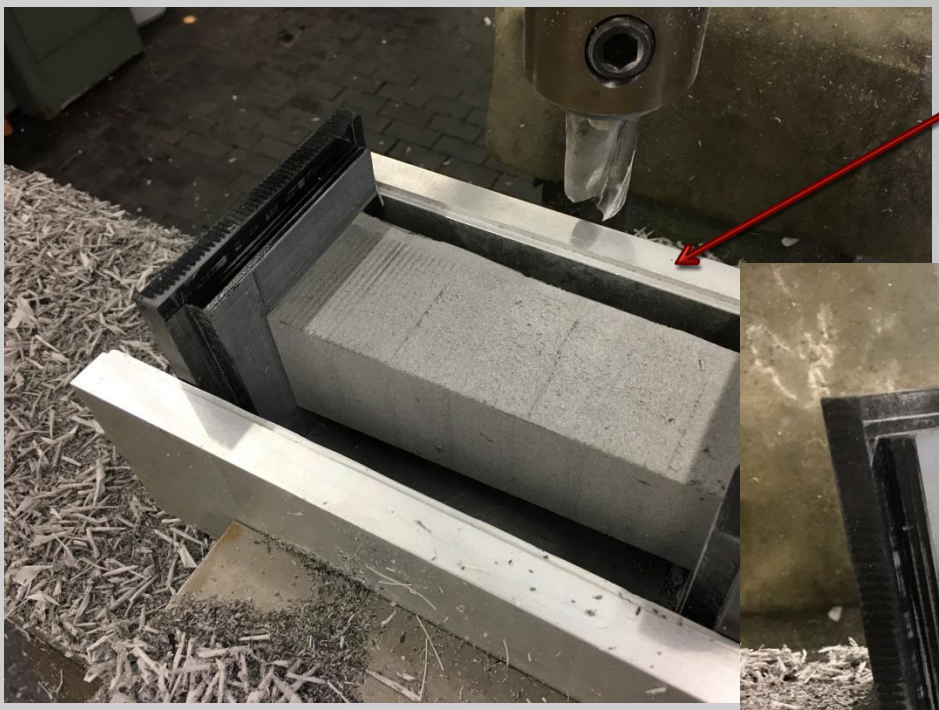


HCAL Light Collection Current

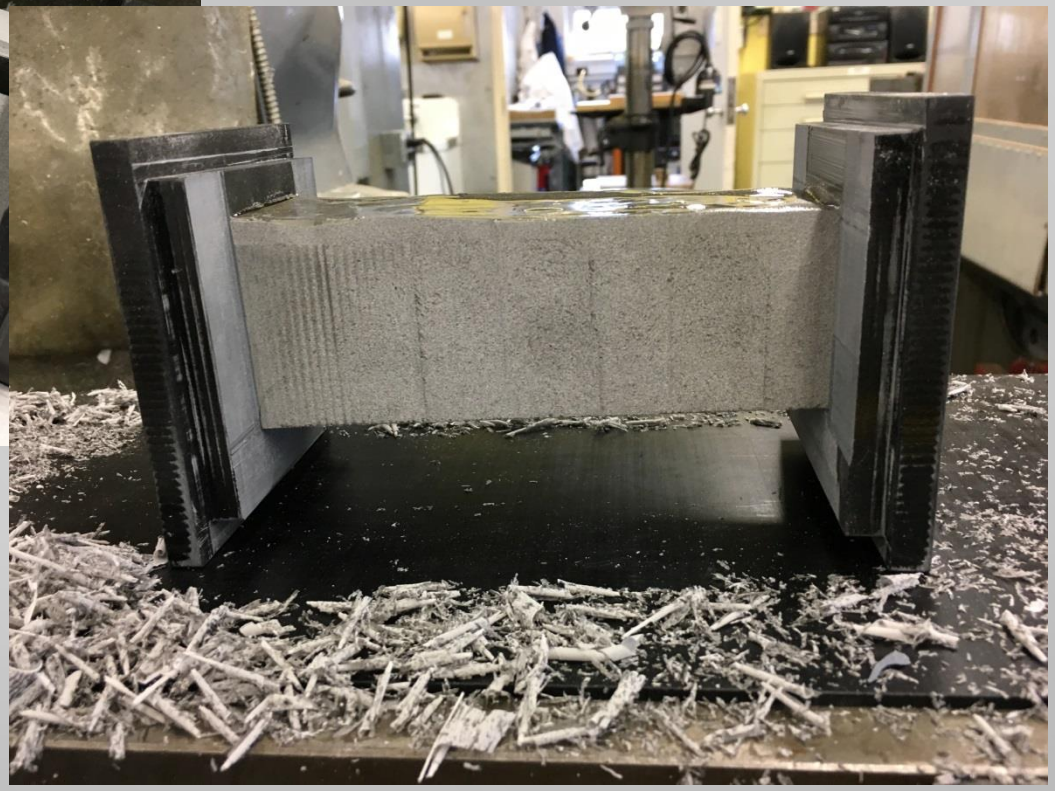


- Mold clamped in place
- Block tilted in mold
- Machined in ~8min.

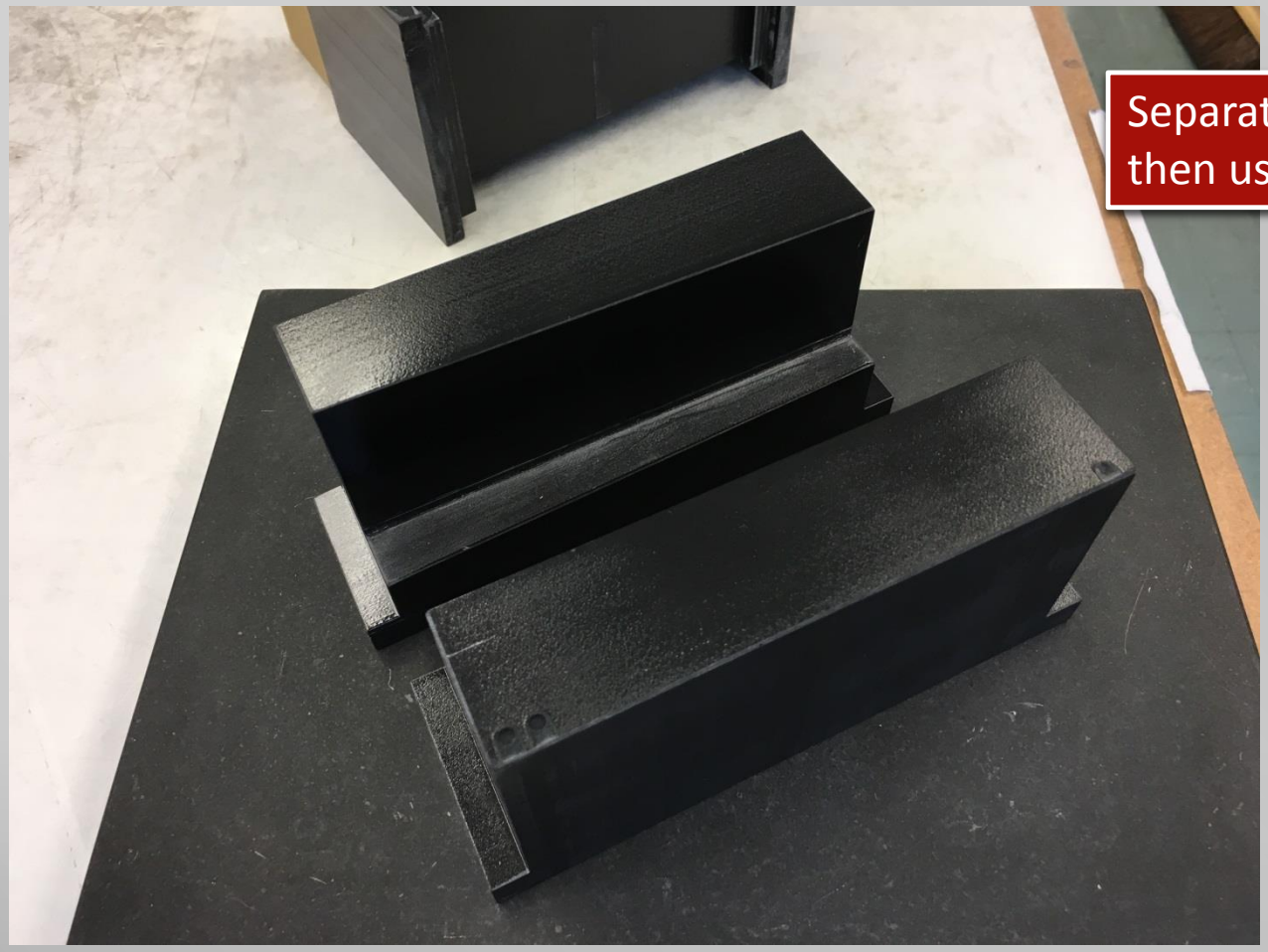
HCAL Light Collection Proposals



- Mold is flipped to machine 3 sides
- Removed from vise

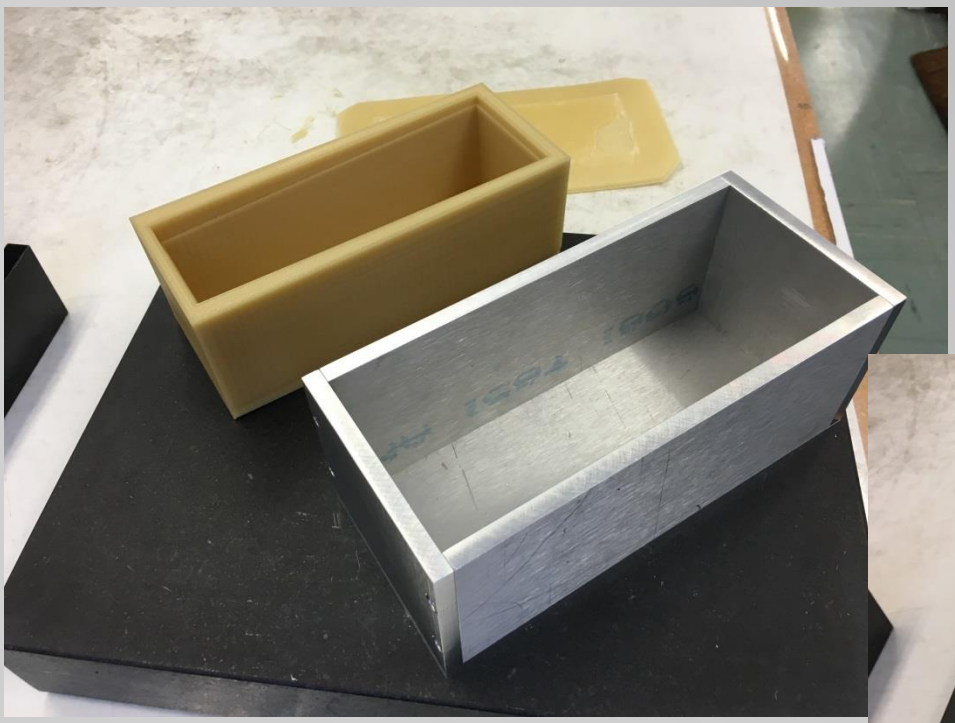


EMCAL Machinable Mold



Separate 3D Printed clamps are then used to machine final side

EMCAL Dissolvable Mold



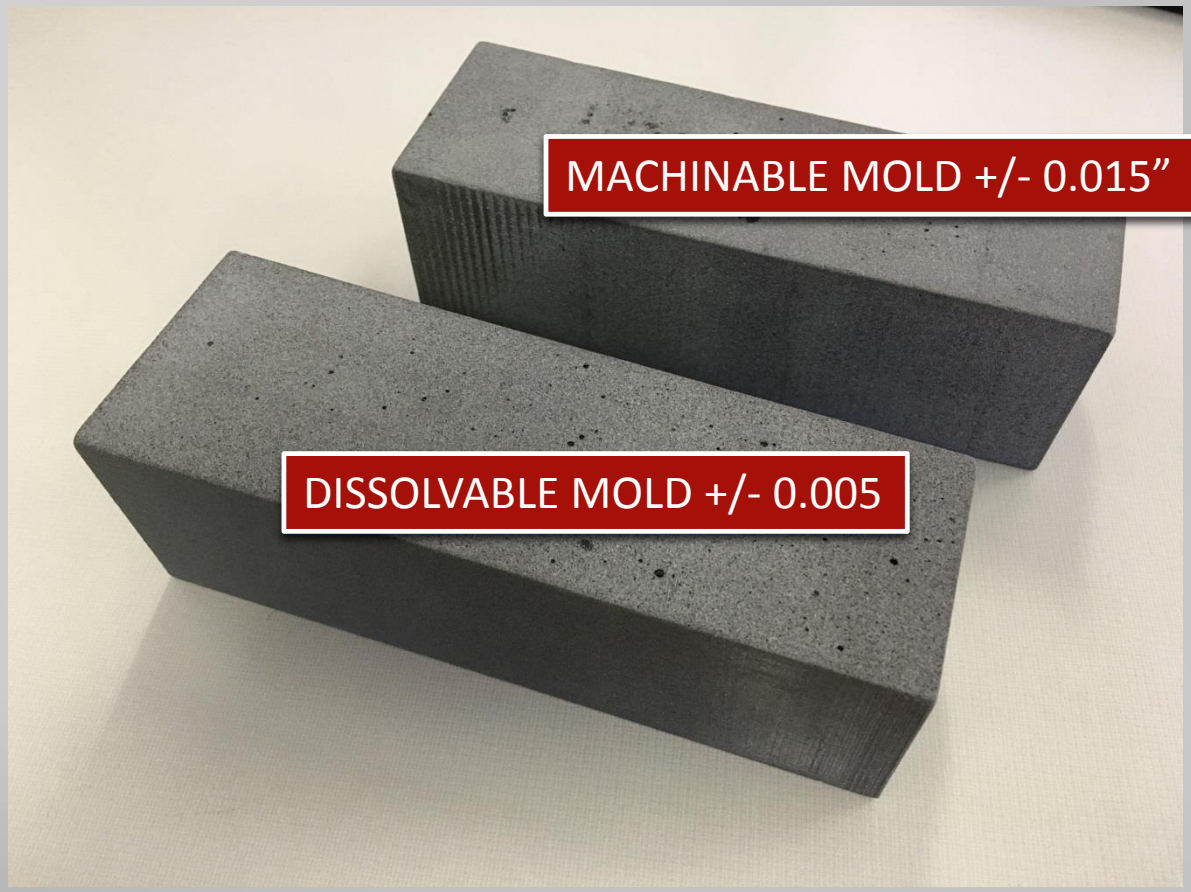
Dissolvable mold is printed from PVA filament and inserted into an aluminum box for stiffening.

EMCAL Dissolvable Mold

Filled with a pre-mix of tungsten powder and epoxy.

Mold is removed for aluminum box and placed into a warm bucket of water for a few hours. The mold is then peeled away and cleaned up.

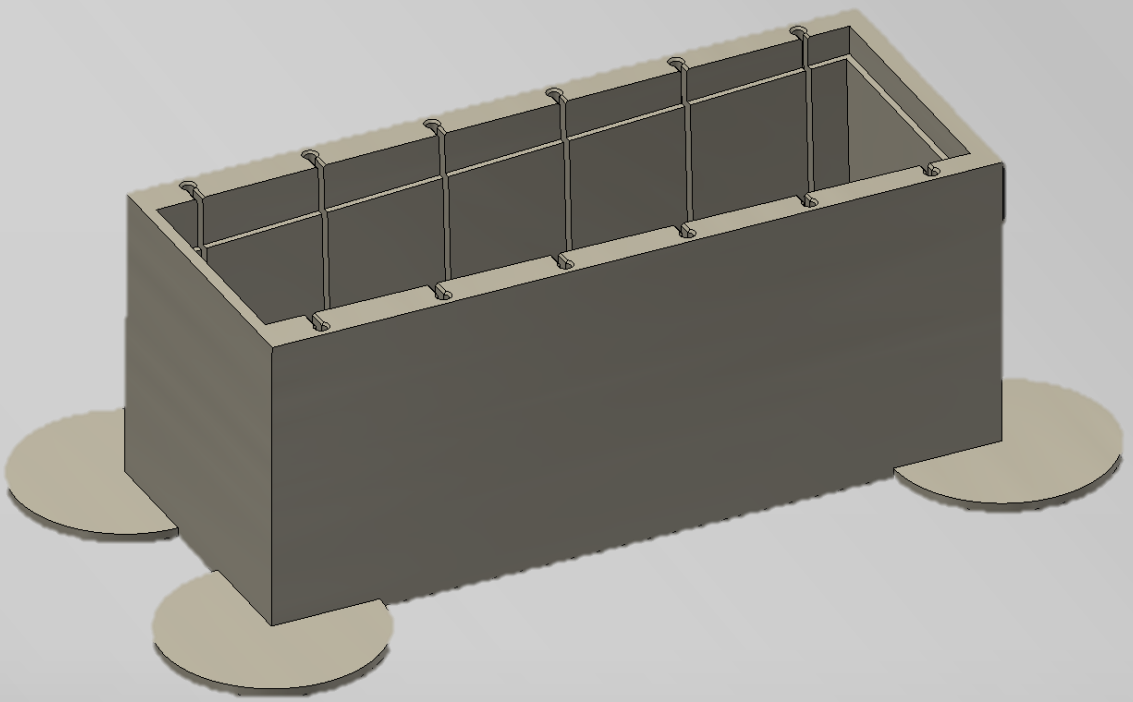
EMCAL Mold Designs



Accuracy of machinable mold can be made better (+/-0.005).

Dissolvable mold is actually better then +/- 0.005. We measured to +/- 0.002.

EMCAL Mold Designs – Next Step



Print dissolvable mold with 2x2 screens.

Print machinable mold with 2x2 screens.